# i-FoRST

Info from Faculty of Resource Science and Technology

UNIVERSITI MALAYSIA SARAWAK
UNIMAS

## MEMORANDUM OF AGREEMENT BETWEEN FACULTY OF RESOURCE SCIENCE & TECHNOLOGY AND PPB OIL PALMS BERHAD



## BioBorneo 2014: Conference & Exhibition

ISSN 2289-5280

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# Message from the Dean

We have now come to the end of the year 2014. Looking back, the faculty has made progress tremendously. Researchers from our faculty have obtained numerous additional grants, published in high impact journals with many of us received incentives from UNIMAS, won gold medal awards in several exhibitions and academic competitions (national and international) and signed MOUs with stakeholders.

I hope the excellent work will continue. On the student front, we are now embarking on teaching methodologies based on Outcome Based Education (OBE) concept as well as getting involved in Massive Open Online Course (MOOC), of which two of our lecturers won the competition at the national level. All these require commitments and support, mainly from lecturers, as well as additional support from administrative and support staff.

I hope we can join forces to bring our faculty to greater heights and propel ourselves towards excellence, not only in UNIMAS but also at State and National Level. Thank you for the support and together we can achieve more.

Regards,

**Assoc. Prof. Dr. Mohd Hasnain Mohd Hussain**

# BioBorneo 2014 : Conference & Exhibition


BioBorneo Conference and Exhibition, an annual event of biotechnology in Malaysia other than the BioMalaysia has been held alternately in Sabah and Sarawak. The first BioBorneo was held in 2012 at Kuching, Sarawak, where it was jointly organized by Ministry of Science, Technology and Innovation (MOSTI) together with Sarawak Biodiversity Centre (SBC). The second year of this event was held in Kota Kinabalu, Sabah, in 2013 with the support and cooperation of Sabah Economic Development and Investment Authority (SEDIA). All programs held during the first and second year successfully attract many fellow investors, businessmen, academicians and also the students to those events.

After the event in Sabah last year, this year , Sarawak again is the venue and this time the BioBorneo 2014 took place in Kota Samarahan, Sarawak. This event was jointly organized by MOSTI, Sarawak Biodiversity Centre and Universiti Malaysia Sarawak together with collaboration of Biotechnology Corporation and was held on 5-7 May 2014 at DeTAR PUTRA of Universiti Malaysia Sarawak, Kota Samarahan.



With the theme of "Sustaining the Bioeconomy Community", BioBorneo gathered around 146 participants supported by 22 invited speakers and moderators. Officiated by YB Tan Sri Alfred Jabu Anak Numpang, the event started with the conference being held in Arena Gemilang, DeTAR, in the morning of the first day. The three-day event was filled with interesting activities such as BioIndustry expo and exhibition, business matching, conferences, BioEducation, poster presentation in the first and second day of the event and the BioExploration took place on the third day where the participants made educational visits to some key destinations .

In BioIndustry expo, around 40-60 booths from government, semi-government and private sectors took part in promoting their products ranging from the agricultural, cosmetic and health products of biotechnology to the lab equipment used in biotechnology field. Some business matching were successfully made during this event .Meanwhile concurrently, a conference was held in Arena Gemilang, DeTAR PUTRA, which was facilitated by dedicated invited panelists from many study areas either from government, semi-government and private sectors that are involved in sustaining the biotechnology and bioeconomy. Great titles of presentation by these panelists had attracted many participants to all sessions.

The conference was divided into five sessions, namely, Bringing Community on Board, followed by Treasuring Intellectual Property, Demand Driving Strategy, and Premium Value Add and the last session was Strategies for Sustainability. These sessions concluded with another panel discussion session with moderators. For the BioEducation program, some of the schools, colleges, IPTA and IPTS had been invited to participate in order to promote the value of knowledge in those educational hubs. Other side activity, for instance, the poster presentation was also held whereby a number of researchers and dedicated post-graduate students from government and private institutions presented new research findings.



- Dr. Samual Lihan


Faculty of Resource Science & Technology (FRST) UNIMAS has signed a Memorandum of Agreement (MoA) with PPB Oil Palms Berhad (A subsidiary company of Wilmar International Ltd) on 27 May 2014. Present for the MoA signing was Prof. Dr. Kopli Bujang, Deputy Vice-Chancellor (Research and Innovation) of UNIMAS and Assoc. Prof. Dr. Mohd Hasnain Md Hussain, Dean of FRST while PPB Oil Palms Berhad was represented by Mr. Jeremy Goon, Head of Group Corporate Social Responsibility.

An agreement between UNIMAS and PPB Oil Palm Berhad is set to promote sustainable biodiversity management through conservation of rare, endangered and threatened species in oil palm areas statewide. Besides that, both sides will work together on this strategic plan, particularly on matters relating to biodiversity such wildlife and environmental management.

# Memorandum of Agreement between Faculty of Resource Science & Technology and PPB Oil Palms Berhad



Dr. Samsur Mohamad

Dr. Samuel Lihan

Dr. Sim Siong Fong

# UNIMAS EXCELLENT AWARD CEREMONY ( MAGU ) 2014

## - 26 JUNE 2014 -

Tomy Bakeh

Nazri Latib

Siti Hajar Abu Bakar

Sheela Ungau

Fatimah Daud

Nana Lias

Photo by : UNIMAS Photographer

# PRE 5S AUDIT BY MALAYSIAN PRODUCTIVITY CORPORATION

# Visitors from National Sun Yat-sen University, Taiwan

**Prof. Dr. Mok demonstrating how to record the underwater sound using hydrophone.**

Department of Aquatic Science had hosted two researchers from National Sun Yat-sen University, Kaohsiung, Taiwan from 8 to 17 of August 2014. Prof. Dr. Hin-Kiu Mok is an expert in Bioacoustics of Fish, while Assistant Prof. Dr. I-Ting Hsieh is a taxonomist of Sipuncula. The main purpose of coming to Sarawak is to study the biodiversity of Sipuncula in South China Sea coastal region. However, both of them were kind enough to share their expertise through two separate talks and demonstrate hands-on techniques in the field. Dr. Hsieh also taught several undergraduate students on the anatomy of Sipuncula by dissecting a few fresh specimens in the laboratory. The sampling sites covered during this visit were Sematan, Lundu and Kuching areas. This short visit had inspired us and led to some new ideas for future research collaborations

*- Siti Akmar Khadijah Ab Rahim*

***Sipunculus nudus*, one of the main Sipuncula species found at sandy beaches.**

**Prof Mok's talk entitled "Application of Bioacoustic in Marine**

**Dr. Hsieh showed the correct technique to dissect the *Sipuncula*.**

# CHEMISTRY News

The Department of Chemistry, Faculty of Resource Science and Technology in collaboration with Institut Kimia Malaysia (IKM), has successfully organized the 4th Junior Chemist Colloquium (JCC) on 20 - 21 August 2014. In this colloquium, four plenary speakers were invited in which two were from industries and two were from the department on topics related to chemistry in global perspective. There were 25 oral presentations given by our Masters and PhD candidates. The JCC has provided a good opportunity for the students to present their research findings and exchange knowledge with their friends. In addition, this event also provided a platform for the newly registered PhD candidates for their proposal defense. This colloquium has also received support from Institut Kimia Malaysia and local suppliers through their participation in exhibition and advertisements.

The JCC committee under the leadership of Associate Professor Dr Zainab Ngaini has put their best effort and time to ensure the colloquium is well organized. It is envisaged that JCC will be held in the future for the benefits of the students and to enhance the exchange of knowledge on chemistry and beyond.

Besides, we are always delighted with the visit from schools. In the beginning of this year on 13 February 2014, there were 24 A-level students from Lodge International School participated in a one-day 'Workshop on Instrumentation and Chromatography Technique' following from the success of the instrumentation workshop that was organized for the A-level students from Lodge International School in the year 2013. Samples preparation and the theoretical aspects on the operation of NMR, GCMS, FTIR and UV instrumentations were introduced to the students by Dr. Tay Meng Guan and Dr. Sim Siong Fong with the help from lab assistants and science officer. The chromatography techniques were handled by post-graduate students from Inorganic and Physical Chemistry Lab. In this session, the Lodge School students even can pack their own column to separate dyes with different colours.

*- Dr. Wee Boon Siong, Amira Satirawaty and Dr. Tay Meng Guan*

**Student Presentation**

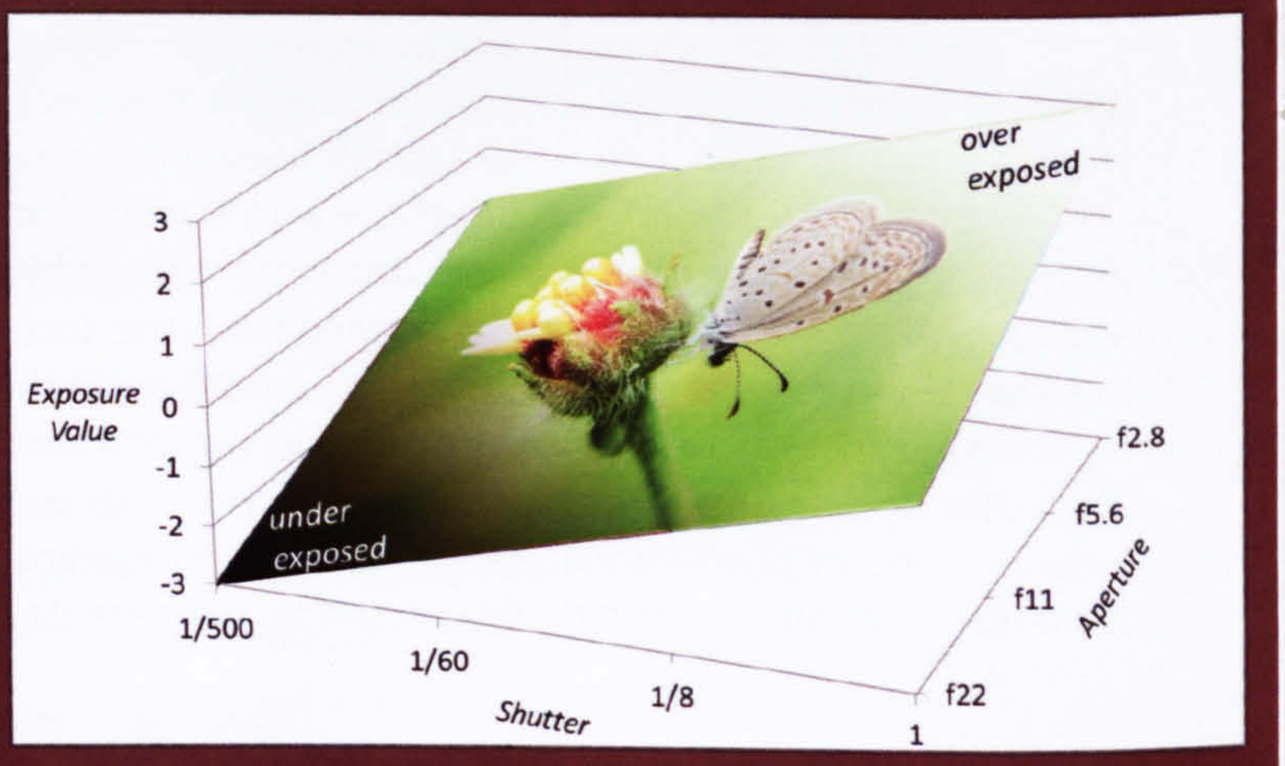
**Booth exhibition**


**Participants, speakers and JCC committee**

# Wildlife Photography - Balancing Exposure


In photography, exposure is the amount of light captured by the camera sensor in a single shot. When there is too much light exposed to the sensor, the photograph will end up looking washout or in photographic term - over exposed. Conversely, the photograph will look dark or under exposed when the sensor received insufficient light exposure. The key to produce a beautiful and well exposed photograph is knowing how to control the amount of light that goes to the sensor. Although most of the modern digital cameras have very reliable automatic exposure control, manual or semi-manual (i.e. aperture priority or shutter speed priority) exposure settings will give extra control over highlights, shadows, depth of field and motion blur. Manual and semi-manual control over exposure is particularly important for wildlife photography due to complex lighting situation in the field. Exposure can be controlled via three connected functions – shutter speed, aperture, and ISO sensitivity. The shutter speed controls over the length of time given for light to reach the sensor. A 1/4 shutter speed, for example, gives exactly 0.25 second of light exposure on the sensor. However, taking the photograph of a fast moving animal at 0.25 second exposure will produce motion blur as the animal shifted when light is still being casted on the sensor. Adjusting to a faster shutter speed can reduce or eliminate motion blur. A 1/500 shutter speed which gives 0.002 second of light exposure, for instance, eliminates most motion blur as the animal barely shifted between the short frames of time.

Solving the motion blur however creates another problem. As the length of time for light to reach the sensor is reduced, so does the amount of light exposed on the sensor and thus darken the photograph. This is where the aperture plays another important role – to control the amount of light able to enter the camera and onto the sensor at a particular time frame. The aperture acts as the lens iris and it controls the amount of light passing through by widening or closing the iris in similar fashion to that of the human eye. Opening the iris allows more light to pass through while closing it reduces the light that comes in. Aperture is valued in f-stop number with lower number representing wider iris opening and vice versa. Therefore, the exposure level can be maintained by changing the aperture value in the opposite of the shutter speed adjustment.




Even though the level of exposure can be maintained with wider aperture when faster shutter speed is needed, the depth of field is inevitably affected. As the aperture is widened, the depth of field will also become shallower or in other words, less area of the photo will be in focus. In wildlife photography, it is favorable to have sufficient depth of field for the whole animal while maintaining out of focus background to avoid distraction.

A telephoto lens with wide aperture is extremely expensive and typically reserved for professional wildlife photographer. Another option to avoid motion blurs with lenses that is not capable of wide aperture (e.g. f 2.8 at 200 mm) is by increasing the ISO speed. The ISO speed controls sensor sensitivity towards light signal thus allowing exposure to be manipulated without changing the shutter speed or aperture value. It is particularly useful to maintain high shutter speed in low light situation when large depth of field is desired (to keep whole animal in focus), or when the aperture is already at its widest limits (lens limitation). Nevertheless, there is also a downside when using higher ISO speed since higher sensor sensitivity also increases the noise level, which causes grainier photograph and loss of details. In a nutshell, making beautiful and well exposed photograph of an animal requires juggling between shutter speed, aperture and ISO speed. And like every other skills, practice makes perfect.

f = 32 f = 11 f = 2.8



Badiozaman Sulaiman

# Genomics-assisted Breeding for Kelampayan Improvement

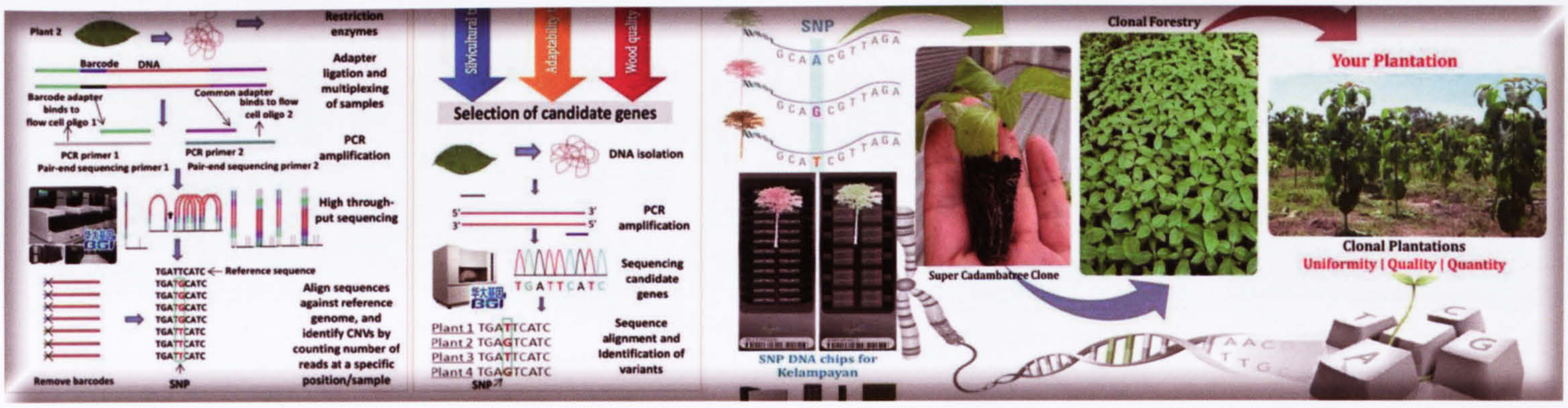



**Figure 1: A selected Kelampayan mother tree and its uses**

Kelampayan or scientifically known as Neolamarckia cadamba has been selected as one of the fast growing plantation tree species for planted forest development in Sarawak. It is praised as a "miracle tree" in China due to its fast growing characteristics and an ideal tree species to study genetic functions related to tree growth and cell wall development. It is one of the best sources of raw material for the plywood industry, besides pulp and paper production. Kelampayan has been traditionally used as natural antibiotics in the treatment of various ailments like diabetes, diarrhoea, fever, inflammation, cough, vomiting, wounds, ulcers and antimicrobial activity. For instance, the natives of Chhattisgarh in India dip the kelampayan bark in water used for bathing and this herbal bath makes the skin soft and free from all infections. To date, all published scientific findings are in agreement with the traditional uses of the kelampayan.

A joint venture project (MoA, 2013-2016) between Sarawak Timber Association (STA) and UNIMAS is being conducted to establish the linkages between gene markers (i.e. SNPs) and productivity through genomics-assisted breeding coupled with the next generation sequencing (NGS) technologies in order to significantly improve the precision of genetic improvement practices of kelampayan. UNIMAS is also collaborating with other two institutions on this research project, namely the Sarawak Forestry Corporation (SFC) and the Beijing Genomics Institute (BGI), Shenzen-China. BGI is currently the world largest genomic organization with a focus in research and application in personalized healthcare, agriculture, conservation and bio-energy fields. It is hoped that the project will increase the speed of the breeding cycle thereby reducing the production costs, and accelerating the production of elite kelampayan clones into the market without any genetic modification.

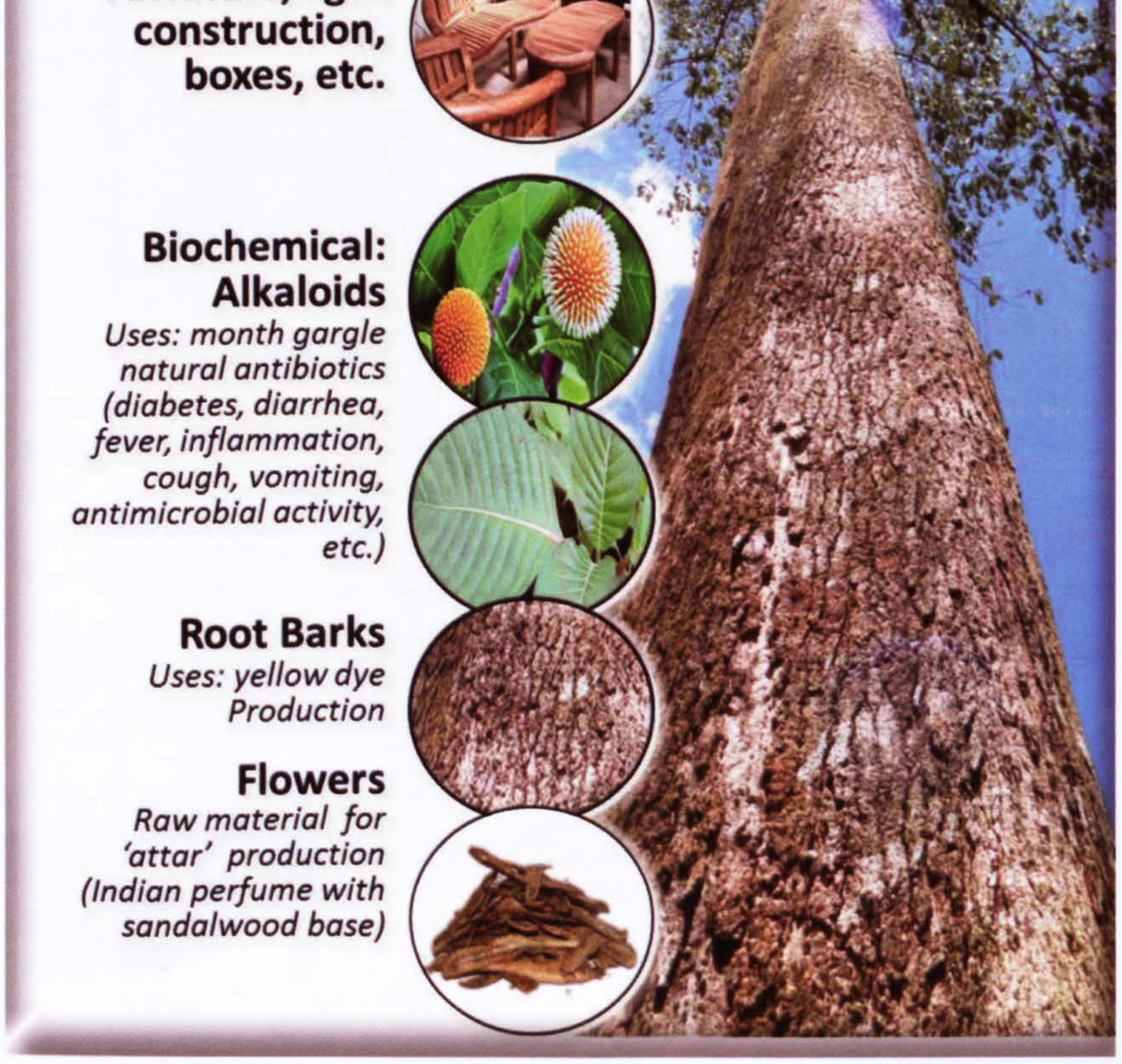



**Figure 2: SNP discovery through transcriptome sequencing and genomics-assisted breeding of Kelampayan**

*Ho Wei Seng and Peter Ling*

# A Field Trip to Discover Pulau Satang Besar


A day trip visit to Pulau Satang Besar was conducted on Saturday, 19 April 2014. The trip was specifically organized for UNIMAS undergraduate students currently registered in two courses, namely, Nature-based Recreation and Ecotourism (STT 3173) and Ecotourism Industry in Malaysia (STT 3183). The group consisting of 129 UNIMAS undergraduate students were accompanied by seven UNIMAS staff and family members. The trip was intended to achieve the following objectives :

***1.To explore potential contribution of biodiversity within the coastal area to ecocoturims sector,***

***2.To familiarise and expose students to ecotourism attractions & opportunities available along the coast area and in Palau Satang Besar,***

***3.To expose students to exisiting development and major challenges faced by the ecotourism destination visited,***

***4.To instill awareness among younger generation on the importance of protecting and conserving natural resources for ecotourism,***

***5.To inculcate and motivate critical thinking among students in seeking knowledge and experience.***

This trip was made possible with the assistance of Malaysia Maritme Enforcement Agency (MMEA) in Muara Tebas. MMEA provided one primary ship (KM Bijak) and four auxiliary boats (KM Sembilang, KM Siagut, KM Penggalang dan KM Pengawal) to ferry the entire group of UNIMAS students, staff and family members. Sixty-four dedicated crews from MMEA were stationed in the ship and boats for the entire journey. After everyone were on board, around 0900 hr the ship and boats departed from MMEA's jetty in Muara Tebas to Pulau Satang Besar. During this journey to the island, group members were able to experience, enjoy magnificent scenery, appreciate wonderful landscapes (e.g., Tanjung Po, Pulau Lakei, and Gunung Santubong) and admire fascinating marine lives and plants in the sea water and along the coast.

The journey to reach the island took 2 hours 30 minutes. Due to shallow water, the MMEA ship and boats had to anchor in the open sea about 100 meter from Pulau Satang Besar. Three small long boats owned by a local villager were ready to fetch us from MMEA's ship and boats. Everyone took to the long boat as each boat could only accommodate eight persons at any one time. On arrival at the island, we encountered the sunny weather and the cyrstal clear water. On the island, the group was greeted by staff of Sarawak Forestry Corporation (SFC) headed by Mr. Franklin Ong who gave a briefing on Talang-Satang National Park.

Talang-Satang National Park is the first marine national park established in Sarawak covering 19,400 ha territorial water. The park constitutes the coastline and sea surrounding four islands, namely, Pulau Talang Besar, Pulau Talang Kecil, Pulau Satang Besar dan Pulau Satang Kecil. It was established with the primary aim of conserving Sarawak's marine turtles. The four islands including Palau Satang Besar were mentioned to record approximately 95 % of all the turtle's landings in Sarawak. Three species of turtles including Green turtles (*Chelonia mydas*), Hawksbill turtle (*Eretmochelys imbricata*) and Olive Ridley turtle are reported to have landed and laid eggs on the island. Sarawak Forestry Corporation Sarawak started the Sea Turtle Volunteer Programe (SSTVP) as a unique ecotourism programme that offers a chance for visitors to learn about turtle conservation and to have an encounter with marine turtles. The major threats to the turtles population are illegal hunting for meat and shell, uncontrolled collecting of eggs, entanglement in fishing nets and ingestion of toxic plastic which turtles mistaken for jellyfish. Pulau Satang Besar is also one of the sites for the turtle conservation involving the local communities. The turtle hatchery site on the island is a potential attraction, where visitors can learn all about the conservation of turtles.

The sea around Pulau Satang Besar has shallow reefs which is excellent for snorkelling and scuba diving. Other interesting activities awaiting visitors to Pulau Satang Besar are jungle trekking, swimming, kayaking, rock-climbing and sun bathing. During the visit, several foreign and local visitors were seen on the island enjoying the beach and sea. Currently, only limited number of accommodation facilities is available for overnight visitors. With the growth of visitors, local villagers can take advantage of the opportunity to build and operate appropriate quality accommodation facilities and other services to meet needs of visitors. Pulau Satang Besar is a pristine site and an excellent ecotourism destination. However, conservation of turtles on this island takes priority over ecotourism. Therefore, we look forward for Pulau Satang Besar to remain as a prime destination for conservation of the turtles for future generation.

After spending only two hours in Pulau Satang Besar, everyone had to board MMEA ship and boats for the return journey to Muara Tebas, arriving safely at MMEA jetty at around 1700 hr. The field trip has been considered a success in achieving its desired objectives. Students have not only enjoyed the cruise but also gained useful knowledge and experience regarding ecotourism potential of the coastal area.

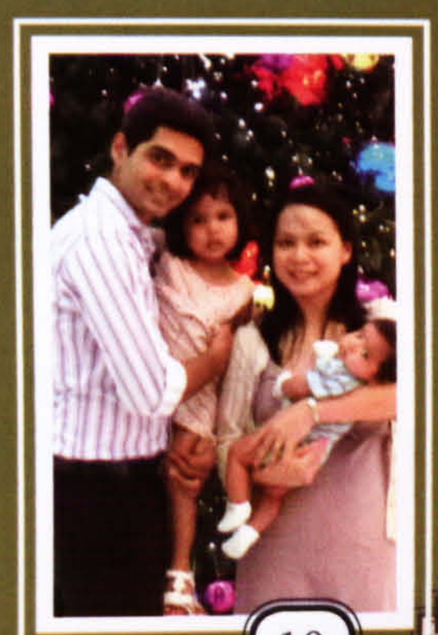
We would like to extend our gratitude to all MMEA officers and staff for making this field trip possible, successful and memorable. A special thank to Laksamana Pertama Maritim Tuan Haji Ismaili Bujang Pit, Leftenan Komander Aidil Azhar, Leftenan Maritim Rayhaizie, Leftenan Muda Mohd Shidec, Leftanan Muda Khairuddin and Leftenan Madya Roslan for all their serious effort and commitment. Hopefully, this pioneer program with MMEA will enhance better relationship between the Faculty of Resource Science & Technology, UNIMAS and MMEA. We are also thankful to Tuan Haji Sapuan Ahmad, Director of Sarawak Forest Department, for issuing permits to enable us to visit to Pulau Satang Besar. Lastly, we would like to thank the staff of Sarawak Forestry Corporation in Pulau Satang Besar for their assistance and patience.

*- Abas Said*

# My story

I have always loved plants. This passion for plants made me take up a degree in Plant Science. I was fortunate to have obtained a place at UNIMAS in the 2002 batch. Little did I know that it would be the best three years of my life. I got the opportunity to meet some great people, make some good friends and get out of town on field trips. Even before graduating, I was offered a position as a 'Research Assistant' with the Institute of Biodiversity and Environmental Conservation, UNIMAS. During that time, I also applied for the position of a 'Tutor' at UNIMAS and was very lucky to get the post. I was granted a scholarship by the 'Ministry of Higher Education' to pursue a PhD in Plant Science at the University of Reading, UK. By 2011, I joined the Department of Plant Science and Environmental Ecology, FRST, UNIMAS as a lecturer. I have also completed a PgDip in 'Teaching and Learning'. My ongoing research involves tissue culture studies in cocoa. At the same time, I am also happily married with two wonderful children. My journey as a plant science graduate until now happened so quickly that I find it hard to believe. But all I can say is that it is important to follow your dreams and the rest will just follow.

*- Rebicca Edward*



# NGABANG GAWAI UNIMAS 2014

17 JUNE 2014

# RAMAH TAMAH AIDILFITRI UNIMAS 2014

7 AUGUST 2014

# NEW STUDENTS WELCOMING WEEK

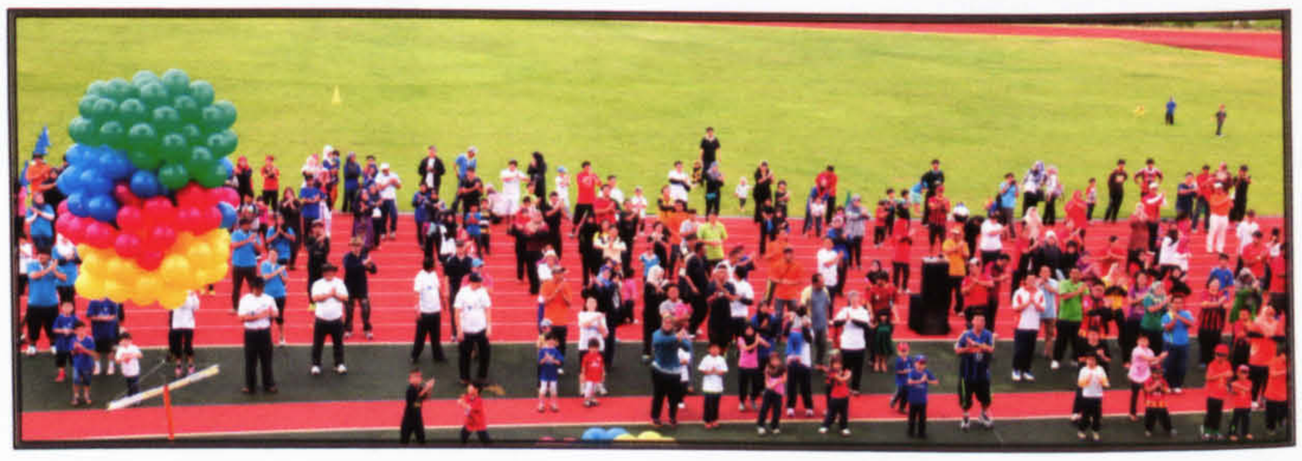
5 SEPTEMBER 2014

# · OBE · OUTCOME BASED EDUCATION WORKSHOP

22-23 OCTOBER 2014

# THE BRIDGING PROGRAMME GRADUATION CEREMONY

24 APRIL 2014






# UNIMAS Family Days 2014

12 APRIL 2014

# Staff News

## Head of Department

Dr. Mohd Effendi b Wasli
Department of Plant Science and Environmental Ecology
- 1 July 2014 -

Assoc. Prof. Dr. Edmund Sim Ui Hang
- Department of Molecular Biology
- 1 July 2014 -

## Promotions

Congratulations

Prof. Dr. Fasihuddin b Badruddin Ahmad
(VK6)
- 1 June 2014.

Prof. Dr. Pang Suh Cem
(VK7)
- 1 May 2014 -

Prof. Dr. Ismail Jusoh
(VK7)
- 1 May 2014 -

Assoc. Prof. Dr. Chin Suk Fun
- DS54 -
1 June 2014

Dr. Devagi ap Kanakaraju
- DS52 -
27 Feb 2014

Dr. Dency Flenny
- DS51 -
28 May 2014

Wan Nurainie binti Wan Ismail
- DS45 -
27 March 2014

## New Lecturers

Dr. Showkat Ahmad Bhawani

## Newly Weds

Noryanti Baizura bt Badhi

## Staff With Newborns

Shahrin b Bolhassan
&
Affizzah bt Morshidi

Noorbaizura binti Medahi

Sharifah Nazimah bt Wan Yusuf

# Faculty Of Resource Science And Technology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